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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,777	02/21/2006	Jurgen Frank	13156-00037-US	9551
23416	7590	09/10/2008	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ, LLP			REDDY, KARUNA P	
P O BOX 2207				
WILMINGTON, DE 19899			ART UNIT	PAPER NUMBER
			1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,777	FRANK ET AL.	
	Examiner	Art Unit	
	KARUNA P. REDDY	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 June 2008.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-3,5-10,14,16-18,22 and 23 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-3, 5-10, 14, 16-18 and 22-23 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application
 6) Other: _____.

DETAILED ACTION

1. This office action is in response to amendment filed 6/26/2008. Claims 1 and 16 are amended; and claims 4, 11-13, 15, 19-21 and 24 are cancelled. Accordingly, claims 1-3, 5-10, 14, 16-18 and 22-23 are currently pending in the application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claims 8 and 10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. While claim 1 recites a specific list of water-in-oil emulsifiers, claims 8 and 10 are broad and can contain any water-in-oil emulsifier.

Claim Rejections - 35 USC § 102/103

4. Claims 6, 8 and 17-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chaudary (EP 019 662 A2).
Chaudary discloses a water-in-oil emulsion of a water soluble polymer. The water soluble polymer reads on claim 6 and is preferably dissolved in water phase of the

emulsion. The water-in-oil emulsion may be the direct product of an inverse emulsion polymerization process (abstract). Such inversion emulsions are preferably prepared by direct emulsion polymerization starting from a solution of water soluble monomer(s). The water soluble monomer(s) are first dissolved in water and this aqueous phase is emulsified in a hydrocarbon or other hydrophobic medium as the continuous phase to form a water-in-oil emulsion of the monomer(s). The water soluble monomer(s) are then polymerized within the dispersed aqueous phase (page 2, lines 6-15). The water soluble polymers may be non-ionic, anionic or cationic and may be lightly crosslinked by the incorporation of di- or poly-functional monomers (page 2, lines 19-22). Polymerization can be effected using known redox initiators (page 3, lines 11-13). The method of polymerization was carried out by firstly preparing an aqueous phase containing water soluble monomers. The oil phase contains Witcamide 511, which acts as a water-in-oil emulsifier (page 4, lines 21-38). The aqueous phase was then emulsified in the oil phase to give a stable emulsion. Polymerization was then carried out using a redox catalyst (page 5, lines 1-5). It is sometimes advantageous to include an oil-in-water emulsifier or a mixture of oil-in-water emulsifier (lines 17-20). Chaudary provides a method for thickening a liquid medium which is at least mainly non-aqueous with a thickener comprising a water-in-oil emulsion of a water soluble polymer, which water soluble polymer is present in the water phase of the water-in-oil emulsion (page 1, lines 22-26). Non-aqueous media which can be thickened by the inverse emulsions include polar media which are used in printing inks (page 3, lines 24-27).

Chaudary differs with respect to redox initiator pair used to prepare the polymer, water-in-oil emulsifier, and the order of performing the process steps.

However, Claim 6 is written in a product-by-process form and claims 8 and 17-18 are dependent on claim 6. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) and *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

In light of the above, it is clear that Chaudary anticipates the present claims.

Alternatively, in the event any differences can be shown for the product of the product-by-process claims of 6, as opposed to the product taught by Chaudary, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Claim Rejections - 35 USC § 103

5. Claims 1-3, 5, 7, 9-10, 14, 16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudary (EP 019 662 A2) in view of Berghofer et al (US 6, 211, 400 B1) and McCutcheon's: Emulsifiers and Detergents (Volume 1, 1993).

The discussion with respect to Chaudary in paragraph 4 above is incorporated here by reference. Furthermore, the water soluble polymers may be non-ionic, anionic or cationic (page 2, lines 19-20). Suitable non-ionic monomers include acrylamide (page 2, lines 24-25). Suitable anionic monomers include (meth)acrylic acid and their alkali metal and ammonium salts (page 2, lines 27-30). In example 1, the method of polymerization was carried out by firstly preparing an aqueous phase containing water soluble monomers. There is no mention of addition of a transition metal during inverse emulsion polymerization.

Chaudary differs with respect to

- a) the kind of water-in-oil emulsifiers,
- b) the redox initiator pair,
- c) addition of redox initiator and oil-in-water emulsifier to water-in-oil emulsion instead of aqueous monomer solution,

and silent with respect to

- d) residual monomer content, speck content, gel body content and induction times during polymerization,
- e) solid composition.

With respect to a), Chaudary discloses (page 3, lines 6-8) that useful water-in-oil emulsifiers which are present in the monomer emulsions are those having HLB values below 9.0 and Mcutcheon's teaches that water-in-oil emulsifiers with HLB values lower than 9.0 include block copolymers of propylene oxide and ethylene oxide (page 229) and other emulsifiers (pages 229-234) falling within the list recited in present claims.

Therefore, it would have been obvious to one skilled in the art at the time of invention to

use any of the water-in-oil emulsifiers with a HLB value of less than 9.0, absent evidence of criticality associated with the specific water-in-oil emulsifiers recited in present claims.

With respect to b), Berghofer et al teach that in emulsion polymerization systems, peroxide compounds, such as hydrogen peroxide or peroxodisulfate, are used as free radical formers. In order to increase the rate of free-radical formation, reducing agents are used. Since the formaldehyde-free reducing agents, such as bisulfites, are weaker reducing agents, the disadvantage of less complete polymerization compared with formaldehyde sulfoxylates must be accepted (column 2, lines 1-5). Berghofer et al also teach that sulfinic acid is one of the strongest known reducing agents (column 1, lines 5-6). They are preferably used as a cocatalyst in emulsion polymerization together with peroxidic initiators in order to allow the polymerization to be carried out at low temperatures. See example 3, wherein the sulfinic acid is 2-hydroxy-2-sulfinatoacetic acid, disodium salt. See example 11, wherein an aqueous solution consisting of 270 g of water and 33 g of reducing agent according to claim 3 is used in emulsion polymerization. Therefore, it would have been obvious to use 2-hydroxy-2-sulfinatoacetic acid, disodium salt as a reducing agent and hydrogen peroxide or peroxodisulfate as an oxidizing agent of the redox initiator pair, for the above mentioned advantages.

With respect to c), the order of addition of ingredients is merely a matter of choice and is within the skill of the art to adopt such procedure as is found most satisfactory. One would not expect that minor variation in the sequence of contacting reagents would impart substantially different effect especially in light of the specification (paragraph 0066) of instant invention wherein the (co)polymerization is affected after the aqueous phase is emulsified. Court held that the selection of any order of mixing

ingredients is *prima facie* obvious (see also *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)) and selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

With respect to d), residual monomer content of at most 5% by weight, speck content of at most 0.5%, gel body content of at most 0.5% are intrinsically present in the water soluble polymer prepared by process of Chaudary utilizing redox initiator pair of Berghofer et al, and avoiding induction time during polymerization process naturally flows from the combination of inversion emulsion polymerization process of Chaudary and the redox initiator pair of Berghofer et al. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

With respect to e), in light of the specification of instant invention (paragraph 0083) that methods for removing inert hydrophobic liquid and water after copolymerization are within the scope of a skilled artisan, it would have been obvious to one skilled in the art to remove hydrophobic liquid i.e. oil and water from water-in-oil emulsion and obtain the solid composition comprising oil-in-water emulsifier, water-in-emulsifier and at least one homopolymer or copolymer.

6. Claims 1-3, 5, 7, 9-10, 14, 16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudary (EP 019 662 A2) in view of Brown et al (US 2002/0068791 A1) and McCutcheon's: Emulsifiers and Detergents (Volume 1, 1993).

The discussion with respect to Chaudary in paragraph 4 above is incorporated here by reference. Furthermore, the water soluble polymers may be non-ionic, anionic

or cationic (page 2, lines 19-20). Suitable non-ionic monomers include acrylamide (page 2, lines 24-25). Suitable anionic monomers include (meth)acrylic acid and their alkali metal and ammonium salts (page 2, lines 27-30). In example 1, the method of polymerization was carried out by firstly preparing an aqueous phase containing water soluble monomers. There is no mention of addition of a transition metal during inverse emulsion polymerization.

Chaudary differs with respect to

- a) the kind of water-in-oil emulsifiers,
- b) the redox initiator pair and residual monomer content,
- c) addition of redox initiator and oil-in-water emulsifier to water-in-oil emulsion instead of aqueous monomer solution,
- and silent with respect to
- d) speck content, gel body content and induction times during polymerization,
- e) solid composition.

With respect to a), Chaudary discloses (page 3, lines 6-8) that useful water-in-oil emulsifiers which are present in the monomer emulsions are those having HLB values below 9.0 and Mcutcheon's teaches that water-in-oil emulsifiers with HLB values lower than 9.0 include block copolymers of propylene oxide and ethylene oxide (page 229) and other emulsifiers (pages 229-234) falling within the list recited in present claims. Therefore, it would have been obvious to one skilled in the art at the time of invention to use any of the water-in-oil emulsifiers with a HLB value of less than 9.0, absent evidence of criticality associated with the specific water-in-oil emulsifiers recited in present claims.

With respect to b), Brown et al teach a process for preparing an aqueous emulsion polymer including providing at least one ethylenically unsaturated monomer and a free radical redox initiator system under emulsion polymerization conditions, the redox initiator system including an water-soluble oxidizing agent and a sulfinic acid or salts as reducing agent (abstract). Furthermore, it has been surprisingly found that lowered residual monomers are found in emulsion polymerization of ethylenically unsaturated monomers when certain free radical redox initiator systems are used, the redox initiator system including an oxidizing agent and a sulfinic acid or salts, thereof as reducing agent. An improvement is found in reducing residual monomer at the end of an emulsion polymerization as well as in an emulsion polymerization itself (paragraph 0005). The oxidizing agent includes a water-soluble oxidizing agent such as hydrogen peroxide and alkali metal persulfates (paragraph 0011). A preferred reducing agent is 2-hydroxy-2-sulfinatoacetic acid (paragraph 0011). The residual monomer content is typically less than 5% by weight based on polymer weight (paragraph 0025). Therefore, it would have been obvious to use the redox initiator system of Brown et al, preferably containing 2-hydroxy-2-sulfinatoacetic acid as a reducing agent and hydrogen peroxide or alkali metal persulfate as oxidizing agent, in the inverse emulsion polymerization of Chaudary et al to lower the residual monomer content to less than 5% during as well as after the emulsion polymerization.

With respect to c), the order of addition of ingredients is merely a matter of choice and is within the skill of the art to adopt such procedure as is found most satisfactory. One would not expect that minor variation in the sequence of contacting reagents would impart substantially different effect especially in light of the specification (paragraph 0066) of instant invention wherein the (co)polymerization is affected after the

aqueous phase is emulsified. Court held that the selection of any order of mixing ingredients is *prima facie* obvious (see also *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)) and selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

With respect to d), speck content of at most 0.5%, gel body content of at most 0.5% are intrinsically present in the water soluble polymer prepared by process of inverse emulsion polymerization of Chaudary utilizing redox initiator pair of Brown et al, and avoiding induction time during polymerization process naturally flows from the combination of inversion emulsion polymerization process of Chaudary and the redox initiator pair of Brown et al. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

With respect to e), in light of the specification of instant invention (paragraph 0083) that methods for removing inert hydrophobic liquid and water after copolymerization are within the scope of a skilled artisan, it would have been obvious to one skilled in the art to remove hydrophobic liquid i.e. oil and water from water-in-oil emulsion and obtain the solid composition comprising oil-in-water emulsifier, water-in-emulsifier and at least one homopolymer or copolymer.

Response to Arguments

7. Applicant's arguments, filed 6/26/2008, with respect to objection have been fully considered and are persuasive. The objection of claims 6-10, 14 and 17-18 has been withdrawn in view of the amendment to claim 6.
8. Applicant's arguments filed 6/26/2008 have been fully considered but they are not persuasive. Specifically, applicant argues that (A) process according to amended claim 1 differs from the process according to Chaudary et al, since the reference indicates that an oil-in-water emulsifier can be optionally added to the medium which is to be thickened, whereas in the process according to amended claim 1 an oil-in-water emulsifier is added to a solution or dispersion of the monomers in water during the formation of aqueous phase and before the polymerization in step "b"; (B) Chaudary et al only describes that water-in-oil emulsifiers may be present, whereas in the amended claim 1 a process is claimed, in which very specific water-in-oil emulsifiers are recited as present in the oil phase; (C) process according to claim 1 provides homo- or co-polymers having very specific and advantageous characteristics. This can be shown by examples 21-29 in which copolymers are prepared by the process of presently amended claim and the products obtained have very low specks and gel bodies; (D) Office asserts that a person having ordinary skill in the art would find the disclosure of the use of claimed specific initiator pair in Berghofer et al and/or Brown et al for inverse emulsion polymerization of Chaudary et al. Applicant's submit that a person having ordinary skill in the art would not combine Chaudary et al with Berghofer et al and Brown et al because Chaudary et al deals with inverse emulsion polymerization, while Brown et al and Berghofer et al describe "nominal" emulsion polymerization reactions; and (E)

specific water-in-oil emulsifiers recited in present claim 1 are neither described nor suggested in any of the references of Chaudary et al, Brown et al and Berghofer et al.

With respect to (A), applicant's attention is drawn to page 3, lines 18-23 wherein Chaudary et al state that it is advantageous to include an oil-in-water emulsifier or a mixture of oil-in-water emulsifiers in the inverse emulsion latex. Alternatively such an oil-in-water emulsifier may be added to the medium to be thickened either before, simultaneously with, or after the addition of inverse emulsion latex. Thus, it is apparent that it is advantageous to add oil-in-water emulsifier to the inverse emulsion and adding oil-in-water emulsifier to the medium to be thickened is only an alternative embodiment. Furthermore, there is no data to support that addition of oil-in-water emulsifier to the aqueous phase prior to polymerization is critical to the process of preparing water-soluble or water swellable homo- or co-polymers. Court held that the selection of any order of mixing ingredients is *prima facie* obvious (see also *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)) and selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results (see *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946)).

With respect to (B) and (E), applicant's attention is drawn to the new grounds of rejection in paragraphs 5 and 6, necessitated by amendment.

With respect to (C), while examples 21-29 of present invention show low speck content and gel bodies, it is noted that the processes (disclosed in pages 23-25 of present application) involve adding sodium persulfate (i.e. oxidizing agent of the redox initiator pair) to emulsion after mixing the oil phase and aqueous phase and is contrary to what is claimed i.e. adding redox initiator pair to aqueous phase prior to the mixing of oil phase and aqueous phase. Furthermore, there is no showing in the present

specification that the co-polymer prepared by process of Chaudary et al using the redox initiator pair of Berghofer et al or Brown et al and the water-in-oil emulsifiers of McCutcheon having HLB lower than 9.0, would not have the low speck content and gel bodies.

With respect to (D), applicant's attention is drawn to page 3, lines 11-12, wherein Chaudary et al state that polymerization can be affected using known redox initiators which may be oil or water soluble. Thus, it is apparent that Chaudary et al is open to the use of any known redox initiator pair including the redox initiator pair taught by Berghofer et al and/or Brown et al in emulsion polymerization process.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karuna P Reddy/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796